



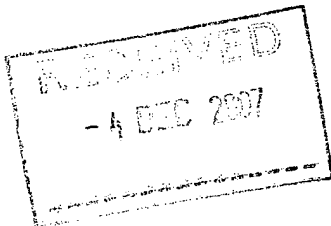
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| Reference 312267EP/PDJ | Application No./Patent No. 04814692.2 - 2222 PCT/US2004042543 |
| Applicant/Proprietor MacDermid Printing Solutions, LLC | |

COMMUNICATION

The European Patent Office herewith transmits as an enclosure the supplementary European search report under Article 157(2)(a) EPC for the above-mentioned European patent application.

If applicable, copies of the documents cited in the European search report are attached.

- ☒ Additional set(s) of copies of the documents cited in the European search report is (are) enclosed as well.

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Refund of the search fee

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.





| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|---|---|---|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (IPC) |
| X | EP 0 197 601 A (STORK SCREENS BV [NL]) 15 October 1986 (1986-10-15) * claims 1-4; example 1 * ----- | 1,3,6,8, 16,20,26 | INV. G03F7/095 G03F7/24 G03F7/40 |
| X | WO 92/02859 A (ZED INSTR LTD [GB]) 20 February 1992 (1992-02-20) * claims 1-5; figures 1,2 * ----- | 16 | |
| X | EP 1 235 102 A (HEIDELBERGER DRUCKMASCH AG [DE]) 28 August 2002 (2002-08-28) * paragraphs [0015], [0016] * ----- | 16 | |
| A | | 1-15, 17-26 | |
| X | EP 0 785 474 A (SCHABLONENTEchnik KUFSTEIN AG [AT]) 23 July 1997 (1997-07-23) ----- | 16 | |
| A | | 1-15, 17-26 | |
| Y | EP 0 940 719 A (SHARP KK [JP]) 8 September 1999 (1999-09-08) * claim 1; figures 1-5 * ----- | 1,3,6,8, 16,20,26 | TECHNICAL FIELDS SEARCHED (IPC) |
| Y | JP 63 077050 A (NIPPON TELEGRAPH & TELEPHONE) 7 April 1988 (1988-04-07) * abstract * ----- | 1,3,6,8, 16,20,26 | G03F |
| The supplementary search report has been based on the last set of claims valid and available at the start of the search. | | | |
| Place of search Munich | | Date of completion of the search 20 November 2007 | Examiner Thiele, Norbert |
| CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document | | | |

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 81 4692

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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20-11-2007

| Patent document cited in search report | | Publication date | Patent family member(s) | Publication date |
|---|---|---------------------|----------------------------|---------------------|
| EP 0197601 | A | 15-10-1986 | AU 590876 B2 | 23-11-1989 |
| | | | AU 5563786 A | 09-10-1986 |
| | | | CA 1296561 C | 03-03-1992 |
| | | | DE 3664825 D1 | 07-09-1989 |
| | | | DK 148886 A | 04-10-1986 |
| | | | ES 8708067 A1 | 16-11-1987 |
| | | | FI 861442 A | 04-10-1986 |
| | | | JP 1661562 C | 19-05-1992 |
| | | | JP 3025770 B | 08-04-1991 |
| | | | JP 61230152 A | 14-10-1986 |
| | | | NL 8500992 A | 03-11-1986 |
| | | | NZ 215656 A | 29-09-1988 |
| | | | US 5041359 A | 20-08-1991 |
| | | | ZA 8602477 A | 30-12-1986 |
| | | | | |
| WO 9202859 | A | 20-02-1992 | EP 0542774 A1 | 26-05-1993 |
| | | | JP 5509177 T | 16-12-1993 |
| EP 1235102 | A | 28-08-2002 | DE 10109041 A1 | 05-09-2002 |
| | | | JP 3524909 B2 | 10-05-2004 |
| | | | JP 2002337303 A | 27-11-2002 |
| | | | US 2002117067 A1 | 29-08-2002 |
| EP 0785474 | A | 23-07-1997 | NONE | |
| EP 0940719 | A | 08-09-1999 | JP 3373147 B2 | 04-02-2003 |
| | | | JP 11237745 A | 31-08-1999 |
| | | | TW 412784 B | 21-11-2000 |
| | | | US 6100010 A | 08-08-2000 |
| JP 63077050 | A | 07-04-1988 | JP 2061908 C | 10-06-1996 |
| | | | JP 7097215 B | 18-10-1995 |

Patent Abstracts of Japan

PUBLICATION NUMBER : 63077050

PUBLICATION DATE : 07-04-88

APPLICATION DATE : 20-09-86

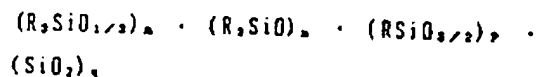
APPLICATION NUMBER : 61222718

APPLICANT : NIPPON TELEGR & TELEPH CORP
<NTT>;

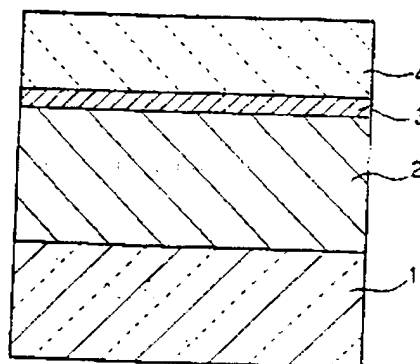
INVENTOR : IKITSU HIDEO;

INT.CL. : G03C 1/00 G03F 7/00 H01L 21/30

TITLE : INTERLAYER MATERIAL FOR
THREE-LAYER RESIST AND PATTERN
FORMING METHOD



(式中、Rは、同一もしくは異っていてもよく、炭化水素基、水素、水酸基、アルコキシ基からなる群から選ばれる一種であり、 $m+n+p+q=1$ 、 $m>0$ 、 n 、 p 、 $q \geq 0$ である)

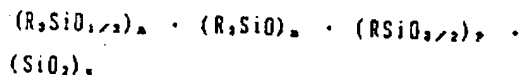


ABSTRACT : PURPOSE: To form an upper layer resist film uniform in film thickness by forming an interlayer composed essentially of specified organopolysiloxane and incorporating an organic peroxide as a cross-linking agent to form a 3-layer resist.

CONSTITUTION: The interlayer of the 3-layer resist is composed essentially of organopolysiloxane represented by the formula shown on the right in which each of R is optionally same or different, and each is H, OH, alkoxy, or a hydrocarbon group; $m+n+p+q=1$, $m>0$, n , p , $q \geq 0$, $m/q \leq 1$ ($q>0$), $m/p \leq 0.3$ ($p>0$), and p and q are simultaneously not 0. Further, the cross-linking agent containing the organic peroxide is incorporated in the interlayer. A substrate pattern is formed by using the 3-layer resist as follows: Spin coating the semiconductor substrate 1 with a lower layer resist 2 made of an organic polymer, then heat treating it, spin coating the lower layer 2 with the interlayer material 3 composed of the organopolysiloxane containing a prescribed amount of organic peroxide, heat treating it, spin coating the interlayer 3 with an upper layer resist 4 made of a polymer to be cross-linked or decomposed by radiation, and finally heat treating it, thus permitting the good upper layer resist 4 uniform in thickness to be formed by using this interlayer.

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Patent Abstracts of Japan



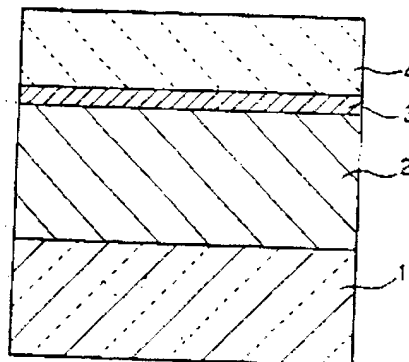
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